ON PHYSICAL EDUCATION.

BY

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ON PHYSICAL EDUCATION.

By Sir LAUDER BRUNTON, M.D., D.Sc., LL.D., V.-P.R.S.

Paper read at the Educational Section of the British Association at its Meeting at York in 1906.

THE name Physical Education is sufficient to show that it is only one branch of education, and before proceeding to study physical education in particular it may be well to say a few words about education in general. The word education is so commonly on our lips, that although we may all know, yet many of us forget, that it is derived from the Latin words "e," out of and "duco," I lead. It ought therefore to be a process of drawing out, of evolving, of developing the latent powers of the organism. It may be illustrated by what occurs in plants. An orchid grower told me that he frequently bought large quantities of dry orchid bulbs, looking like scaly, withered and dried up onions, fit only to be thrown away, but neither the buyer nor the seller knew what possibilities were contained in these bulbs. By careful attention to them, by supplying them with the proper amount of moisture and of warmth these bulbs grew and developed. Many of them turned out to be very ordinary plants, but sometimes one would produce a flower so rare and so beautiful that it would be worth hundreds of pounds. How much this country and the world in general loses by the non-development of latent faculties in men can never be estimated, but Gray, in his Elegy, has indicated the greatness of the loss, when he says of those buried in a country churchyard:

> "Some village Hampden who, with dauntless breast,
> The little tyrant of his fields withstood;
> Some mute inglorious Milton here may rest,
> Some Cromwell, guiltless of his country's blood."

No doubt many explorers, inventors, orators, patriots, poets, and statesmen have died without their latent faculties being

developed and the world is the poorer for it. But in order that education shall fulfil its proper function, it must be a process of development of the mental faculties and not a mere process of cramming.

This is universally acknowledged in regard to classics, which are contained in the educational curriculum, not so much because they are to be of any practical advantage in after life, as that they afford a good means of training the mind. Yet the proper use of education is often forgotten, and it degenerates into a system of cramming the memory with facts and rules which interfere with, instead of aiding, the development of the higher mental faculties. Education ought to be an all round process, not limited to one faculty, whether that be of memory alone, or any other single faculty, whether it be of body or mind. The three-fold nature of man has long been acknowledged in the expression, body, soul and spirit, and in correspondence with this education should also be threefold, physical, moral and mental. The tendency of education to occupy itself with attention to detail to the exclusion of general principles occurs in all three divisions. Eighteen hundred years ago this tendency in moral education was rebuked by the greatest of all Teachers, who said, " for ye pay tithe of mint and anise and commin and have omitted the weightier matters of the Law, judgment, mercy and faith," and at the present moment it seems strange that Christians cannot agree that Christianity should be taught in schools without admixture of dogma. The same tendency which occurs in mental and moral education will be sure to occur in physical education unless means be taken to prevent it, and in order to do this we must clearly understand what the object of physical education is and what it is not. It is not to train up our youths with enormous muscles which would be most useful to a coal heaver, or even with that union of strength and agility which we see in a circus clown or professional athlete. What we want is to train the body so that it shall be a ready and able servant of the mind and, by its complete and symmetrical development, aid in producing a symmetrical development of the brain and of the mental faculties which are

dependent upon it. For a long time the body was not regarded in its proper light, as a servant of the mind and soul, but rather as a clog and hindrance to mental and moral development, and to starve and afflict the body was looked upon as one of the best means of attaining sanctity, and disregard of the laws of bodily health has too frequently been looked upon also as an aid to mental development. All errors, however, contain a germ of truth, and those I have mentioned are no exception to the rule. For if a one-sided conception be taken either of morality or intellectuality, a one-sided development of the organism may assist its attainment. When celibacy and sanctity were looked upon as to a certain extent synonymous, starvation and maltreatment of the body no doubt helped the monastic orders to attain their ideal. If the highest intellectual ideal be to have a complete knowledge of the Greek authors, or of mediæval history, combined with a child-like ignorance of the ways of the world and matters of every day life, then a sedentary life in the study is probably best adapted to attain the object. But if we wish to have a man capable of playing a worthy part in his family, in his business, in his country or in the world, he ought to be symmetrically developed in all directions, and his training should be adapted to this end.

The connection between mind and brain, like many other things, is indicated by Shakespeare, who says, in *Othello*, "O that men should put an enemy into their mouths to steal away their brains." The connection between a limited portion of the brain and a definite faculty was indicated by Broca, who showed that a lesion of the third left frontal convolution was accompanied by loss of the power of speech; but one may, I think, very fairly regard the experiments of Dr. Ferrier on the localisation of the faculties of the brain, which he described at the meeting of the British Association in 1874, at Bradford, as the commencement of a complete knowledge of the relationship between the mind and that part of the body which we know as the brain. The mind and brain can only manifest their action through movements of parts of the body, such as the lips and tongue, eyes and limbs. Some movements are

independent of the brain, and are due to the spinal cord. Such movements are termed reflex, where the stimulus being applied to the periphery is conveyed to a nerve centre and back again through a motor nerve, in somewhat the same way as pulling a string which passes over a pulley may lift a latch and open a door. Boys at school sometimes test reflex action. Let us say A has his hand upon the desk. This seems a tempting object to B and he accordingly prods it with a pin. Almost before he feels the pin and before he fully knows what has been done A draws his hand away. This action is reflex without A being really conscious of it. We know this because in certain cases where a man has had an accident and broken his spine, the feet, on being tickled, jump as they would in an ordinary person, but the patient is quite unconscious that anything is being done to them, and he does not know they move unless he sees them do so. But a stimulus applied to the surface does not reach the spinal cord only in a healthy person, but passes on to the higher and more complicated parts of the nervous system, that is to the basal ganglia of the brain and to the brain itself. For example, A has had time to think, he resents B's prod, and if he happens to have a pin about him, he will very likely press it into B, carefully choosing the place and time where the action can best escape the schoolmaster's attention. The first withdrawal of the hand was simply reflex, but the employment of the pin demanded complete co-ordination of many muscles, thought, foresight and deliberation. The movements are carried on by the muscles, but they are set in action by the nerves, which convey stimuli to them from the spinal cord, the ganglia and the brain itself. The object of physical education is to develop each one of these organs so that it shall become most thoroughly efficient. Muscles are best developed by exercise which, however, must not be carried to too great an extent. Exercise causes the muscles to become larger and stronger, over exercise causes them to become smaller and weaker. Even the most simple actions, such as those of standing and walking, demand the combined action of many muscles to oppose and balance one another. This has been shown by Huxley, whose diagram I reproduce. The body is

supported upon the foot, but unless the muscles in front of the leg (1) contract, the legs and body would fall back, and unless the muscles of the calf contract they would fall forward. But this action of the calf muscle tends to bend the knee and in order to keep the leg straight the muscles in front of the thigh must contract. But in their turn they tend to bend the body forward on the legs, and in order to keep it straight the muscles of the buttocks and back must come into action. At first sight it would seem as if these muscles were set in action directly by the brain because if a man receives a violent blow on the head, he at once falls senseless and limp. Yet on the other hand we all know that we stand and walk without being conscious of the effort and while our thoughts are occupied with other subjects. The reason of this is that the brain and the mind bear the same relationship to the muscles and lower nerve centres that the head of a large business does to those in his employ. Instead of himself directing the action of every workman, clerk and message-boy, he simply says to his foreman or manager "See that this is done." The general manager in his turn directs the managers in the different departments, and they issue orders to the workmen or clerks. In the body the

FIG. 1.—Diagram of Muscles which maintain the erect posture. After Huxley. The muscles are—I, of the calf; II, of the back of the thigh; III, of the spine (these tend to keep the body from falling forward); 1, of the front of the leg; 2, of the front of the thigh; 3, of the front of the abdomen; 4 and 5, of the neck (these tend to keep the body from falling backwards); the arrows indicate the direction of action of the muscles, the foot being fixed.

muscles may be compared to the workmen, the nerve cells of the spinal cord to the managers of small departments, and the so-called basal ganglia and cerebellum to the chief managers. The voluntary centres of the brain issue their mandate to the basal ganglia and cerebellum, and these in their turn regulate the action of the spinal cord and muscles. So long as the

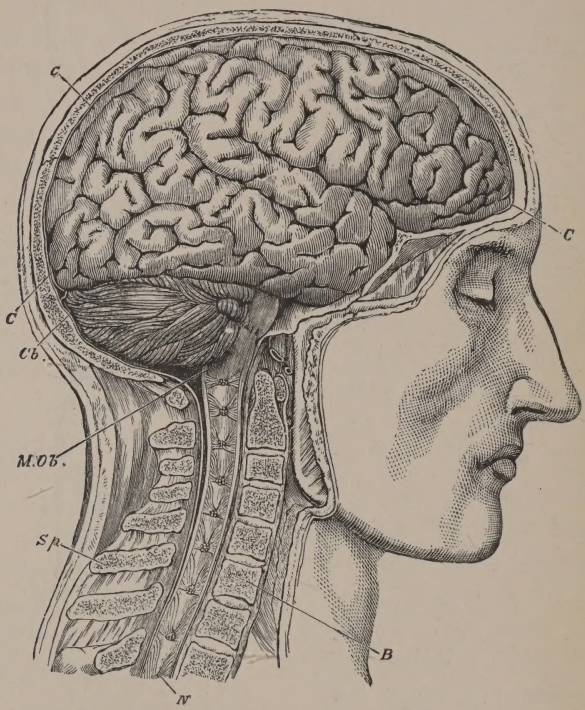

FIG. 2.—A Side View of the Brain and Upper Part of the Spinal Cord in place, the parts which cover the cerebro-spinal centres being removed. *C C*, the convoluted surface of the right cerebral hemisphere; *Cb*, the cerebellum; *M. Ob*, the medulla oblongata; *B*, the bodies of the cervical vertebræ; *Sp*, their spines; *N*, the spinal cord with the spinal nerves. After Huxley (by kind permission of Messrs. Macmillan and Co.).

master is active every member from the highest to the lowest is kept at work, but when the master is away they cease work, with few exceptions, and when the brain is rendered inert by a severe blow, by sleep, or by the action of drugs, co-ordinated actions such as we have spoken of all cease. But in large

factories even when all the machinery is stopped it is usual to have a few men to look after the furnaces and prevent the fires dying out, as this would prevent resumption of work. In the body, even when the muscles become limp and the man is unconscious, the heart still goes on beating steadily and the chest rises and falls in rhythmical respiration. But just as in the factory neither the master nor the subordinates learn the business in a day, so it is in the organism, and the time required to educate it becomes greater as the possibilities increase to which it may afterwards attain. Thus a chicken when it is hatched will at once look round and pick up food, but the newly born babe is absolutely helpless and remains so for many months. It is those centres which ultimately attain the highest development which make the slowest progress. This is well put by Tennyson, in *The Princess*, where he describes the joyful movements of a baby on recognising its mother. "It began to dance its body and to stretch its fatling innocent arms and lazy lingering fingers." The first movements to be perfected are those of the body, which even in after life remain of a comparatively simple kind. The last are those of the fingers, which by and by may become most complicated and are most under the direction of the will. In this particular they resemble the movements of speech which are of all movements best calculated to express mental states, and which are acquired at a late period, although the respiratory movements of which they are composed are of the simplest order, and are perfectly performed even at birth. All voluntary movements are not only slow of acquirement, but they are very imperfectly performed at first. It would appear as if the will had a difficulty in selecting the proper muscles to put in action, and while trying to do this made the mistake of making several contract at the same time and interfere with one another's action. This is well seen in children learning to write, and when the movements of writing have been acquired the pen is held lightly between the fingers and moves softly and rapidly. But when the child begins, it holds the pen very stiffly and the fingers may be seen to be convulsively grasping the pen, which are often seen bent at the joints, and the wrist may be flexed

with the effort. The cause of this has been beautifully demonstrated by Dr. Ferrier, who has shown that when a stimulus to the part of the brain which would govern the movements of the fingers in the hand, is very great, it will extend not only to the arm but also to the centre for the mouth which is adjoining. In consequence of this we see children who are learning to write stick their tongues out of the corners of their mouths quite unconsciously, and as though the action would help the movements of their pen. In acquiring the power of co-ordinated action, the brain has not only to learn how to set the proper muscles into action but to limit the

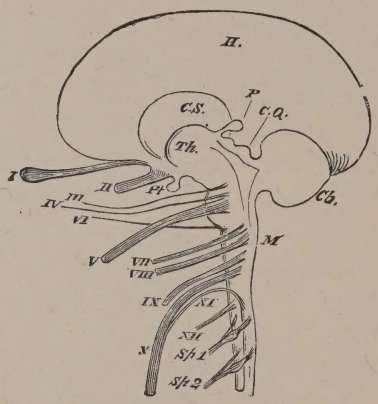

FIG. 3.—Diagram of Brain, Basal Ganglia, Medulla Oblongata, and Nerves. *H*, the brain; *C.S.* and *Th*, basal ganglia (corpus striatum and optic thalamus); *Cb*, cerebellum; *M*, medulla oblongata.

stimulation to these muscles and to prevent the stimulus from spreading to others which would interfere with their action. This power of keeping muscles quiet, or inhibition, as it is termed, is one of the highest faculties of the voluntary centres. It has been investigated by Professor Sherrington and its necessity as a factor in physical training has been insisted upon by Mr. Eustace Miles. It is also one of the great points in the Japanese system of ju jitsu. Learning new movements entails constant and violent action of the cells of the brain proper, and therefore requires severe mental as well as bodily effort, but after it has been done many times the basal ganglia

become so accustomed to the regulation of the muscles that they do it unconsciously, and therefore most people stand or walk while thinking of other subjects, and with trained musicians even difficult pieces may be played with accuracy while the musician is engaged with other things and quite unconscious of the movements of his fingers. Indeed, when movements have thus become, as it is termed, automatic, the interference of the basal ganglia with the cerebrum or cerebellum may disturb their action, and in the case of a musician may lead to mistakes which would not occur if he played on without thinking. The relation of the various parts of the brain to muscular actions and sensation have been well shown

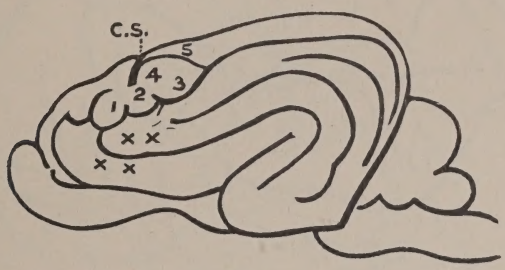

Fig. 4.—Diagram of Brain of Dog, modified from Ferrier. C.S., crucial sulcus; 1, movements of eyes, as if to see freely; 2 and 3, movements of fore-leg, and 4, of hind-leg, as in running; 5, movements of tail requisite in turning quickly, as when a greyhound is following a hare when it doubles; × × ×, movements of mouth and jaws.

by my friend, Dr. Ferrier, and by others who have followed him.—I acted as his assistant in many of his first experiments, observing the results while he stimulated the brain. Often as I had watched them, however, I could not remember them until I considered that they were probably arranged in a definite order for the purpose of getting food, and then it was easy to recollect them. Around a fissure in the brain, called the crucial sulcus in the dog the centres are thus arranged: paw, fore leg, hind leg, and tail, *i.e.*, the movements of the legs which would be required for chasing its prey and of the tail for turning as a greyhound does when a hare doubles. The movements of the jaw are at some distance as the jaws would usually come into

action after the pursuit had gone on for some time. In the monkey, however, the case is different, as the movements of the hands, legs and jaw would all follow one another in regular order. The motor centres in man are arranged very much as they are in the monkey and are adapted for taking and eating fruit. One of the easiest ways of recollecting them is to take the story of Adam and Eve and follow the different actions upon a diagram of the brain, each action corresponding to a definite centre.

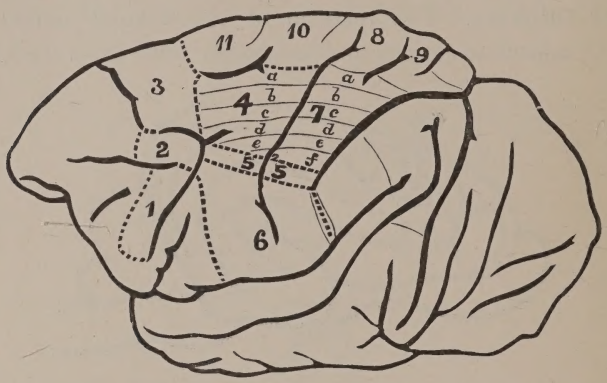

FIG. 5.—Diagram of the Motor Centres in the Brain, modified from those of Ferrier and Horsley. The motor centres have been numbered so as to represent the successive actions in seeing, taking, and eating the apple, &c. 1, Eve sees the fruit (eyes turn to opposite side); 2, looks more eagerly at it (head and eyes turn); 3, turns towards it (head to opposite side); 4, puts forth her hand to take it (*a*, movements of shoulder; *b*, of elbow; *c*, of wrist; *d*, of fingers); 5, luxuriously shuts her eyes, so as to enjoy the sweet morsel more thoroughly; 6, eats the apple; 7, picks out and throws away the refuse (*d*, movements of fingers; *e*, of index; *f*, of thumb; *a*, *b*, *c*, as in 5); 8, 9, 10, 11, goes and gets another for Adam (8, movements of hallux; 9, of small toes; 10, of knee and ankle; 11, of hip).

Hearing, sight, and sensation are located in the various tracts of the posterior part of the brain shown in the figure, while the higher mental faculties are probably more closely connected with the anterior lobes. Injury to various parts of the brain, such as may be caused by a severe blow or by the bursting of a blood vessel, or by stoppage of the circulation through a clot, may destroy one or two faculties while leaving

others intact. Thus the power of writing may be destroyed by injury to the second frontal and the power of speech by injury to the third frontal convolution on the left side in a right-handed man, while the power of the arm and leg may be destroyed, or hearing or vision may be lost by destruction of the corresponding portions of the brain. Nor is it only the physical or mental powers that may be injured by the lesion of a brain. The same may occur in the moral character. This is well shown by the famous crowbar case. A man named Gage,

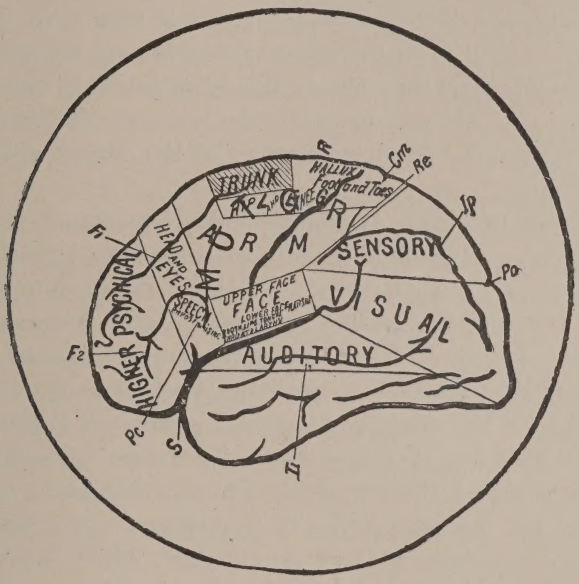

Fig. 6.—Cerebral Cortex, showing the Distribution of Function. After Osler.

living near Boston, in America, was engaged in blasting a rock. While ramming a charge of powder a spark accidentally ignited the powder, and the crowbar, which was 3½ feet long, went straight through his head, entering below his jaw, and coming out at the top of his skull. Wonderful to say he recovered from the injury, but from that time onwards his character was changed. He had previously been a foreman, steady and trustworthy, but afterwards he became exceedingly

idle, flighty, and eccentric so as to be quite incapable of doing his former work, and as his acquaintances expressed it, he was no longer Gage. I have already mentioned that while the brain acts on the body the body reacts on the brain. In cases of amputation of a limb, especially at an early age, the corresponding centres in the brain have been found to become more or less atrophied. Even in such a simple thing as memory we can see the co-ordination of the body with the mind. Many people are apt to forget a name when they simply hear it, but if at the same time they can see it in writing they remember it more easily, and they do this still better if they write it themselves and speak it to themselves, even if they do not say it aloud, because they then obtain the co-operation of the centres for hearing, sight, and memory, the memory of the fingers in writing, and the muscular memory of the larynx and tongue in speaking.

In order to obtain symmetrical development of body and brain by physical exercise it must be remembered that a child creeps before it walks, that the simplest movements must be learned first, and that unless these movements are done automatically they involve a certain amount of mental strain. They cannot, therefore, be regarded as a relaxation from mental work, and on the other hand mental strain will induce bodily fatigue. This has been well shown by Mosso, by means of an instrument called the ergograph, where a weight is raised at intervals by the contraction of one finger. To the string bearing the weight a lever is attached, which works on a revolving cylinder so that each contraction makes a straight stroke of a greater or less height of which indicates a more or less perfect contraction of the finger. The mental fatigue produced by giving a lecture has been thus shown to cause more rapid exhaustion of the muscles of the arm and lessen power to raise a weight. While mental fatigue thus lessens bodily power, we must be careful to remember also that unaccustomed bodily exercises produce mental fatigue. This has been well recognised by the Departmental Committee on a model course of physical exercise, where they say, at p. 12, "the learning of bodily exercises by repeated efforts demands

a concentration of attention and a mental exertion in all respects comparable to what is required in other school lessons." This report gives an exceedingly good account both of the physical and educational effect of exercise as well as a long list of examples by which the muscles of the lower nerve centres may become well developed. In reference to ordinary movements, and especially to balanced movements, the authors say that "at first each of these exercises requires for its performance in varying degree a certain concentration of mind and a certain effort of will, and it is only by repeated, and at first laborious, efforts that perfection of execution is arrived at. A certain degree of fatigue accompanies the earlier performances, and the more immature the structures put into action the more sensitive they are, and the earlier do they show fatigue. At the same time the effect of each performance is stored up as a permanent memory, the repetition becomes less fatiguing, and the result of lessons repeated week by week is that eventually the exercise becomes practically automatic. At this stage its value as an educational exercise virtually ceases, but its value as a nutritive exercise remains and is even enhanced. It follows that in a school course one and the same exercise may be used for two quite different purposes: (1) during the process of learning for its educational effect; (2) when it has been mastered for its nutritive effect, and this distinction is of cardinal importance for determining the times at which, and the manner in which, the exercise should be taken." The value of deep respiration in order to insure complete aëration of the blood is well recognised by the committee, and the free use of respiratory movements is recommended. These movements not only aërate the blood, but they assist the action of the heart so that the circulation also becomes freer. It is to be remembered, however, that the heart is an organ so profoundly sensible to the effects of emotion that in common language we translate many emotions in terms of the heart. Thus we say "his heart sank within him," that is, the beats became feeble and possibly slow, and we may even omit any mention of the fear and apprehension which produced this effect. Or we may say

"his heart beat high," *i.e.*, that is, its beats were strong and powerful, and we may not even name the emotions of hope, joy, or pleasure which produced this action. I have already mentioned that muscles during exercise require an extra supply of blood, and if they do not receive this, increased action causes them to become smaller and weaker instead of being larger and stronger. But increased supply of blood to the muscles requires more powerful action of the heart to maintain the circulation, and thus increased muscular exercise while the heart is stimulated by pleasurable emotions tends to strengthen the body, but exercise with a heart depressed by apprehension or even by simple distaste for the movements will weaken instead of strengthen them. The same thing holds good for the nerve centres. It is, therefore, most important that physical exercise should be rendered pleasant and attractive to children, and that they should not be wearied by monotony. We see the necessity for change more especially in small children. Their movements are almost incessant, so that they weary out grown up persons who may try to imitate them. But these movements, both in children and in young animals, are not continued. They give a little jump here, a little run there, a little climb, a little rest, and so on. Everything is done for a very short time, and its movements are constantly changing. As the child or animal grows older the power of steady movement and continuous attention increases, and it is necessary to adjust the kind and amount of exercise to the age and strength of the child. Even in adult life continuous action is, as a rule, disagreeable, and the most favourite games are those in which periods of brisk movements alternate with times of comparative rest. Amongst the best exercises for developing both the body and the higher nerve centres are games of ball. Such games have been favourites throughout the whole history of the world. We find them pictured in the tombs of ancient Egypt, we find them described in the Odyssey, and we see them to-day in every playground. They train the mind as well as the body, for they require observation in regard to the ball, judgment in regard to its speed, and rapid decision in regard to the movements necessary

to reach it, and rapidity and precision of action in these movements themselves. Their chief disadvantage is the space required for such games, but we hope that this difficulty will be met by the new legislation in regard to playgrounds. Another exercise, at present but little known in this country, but which is likely ere long to be widely practised, is the Japanese system of wrestling, ju jitsu. Very little room is requisite for this, and it is not only very interesting, but in it the same power of observation, judgment and prompt action is required as in games of ball, in order to employ the proper attack or defence as required by the rapidly changing movements of the adversary. Another excellent exercise is that of swimming. It seems strange that in an insular nation whose proud boast it is that it rules the seas, the art of swimming should be unknown to all except a very small minority..

Efforts are being made in some towns to encourage the practice of swimming, and large baths have been erected which are used for swimming in summer, and being covered over in winter are converted into gymnasia. It is to be wished that what is being done in some towns might be done in all. The power of floating of any individual depends greatly upon the chest capacity as compared with the development of the limbs, for the limbs are heavier than water, and the chest, with the air which it contains in the lungs, is the float. Even with a narrow contracted chest a man may swim by vigorous action, but much more exertion will be required to keep him afloat than if he had a large chest. Breathing exercises which develop the chest may, therefore, be looked upon as a useful adjunct to swimming and these exercises if practised by children will form a good preparation, not only for swimming, but for all games and efforts afterwards. By graduated exercise only can the chest be developed. The heart can also be strengthened and it is the gradual strengthening of the heart in course of training that makes it so easy for a man when thoroughly trained to do feats which would be impossible for him in his ordinary condition. But if a person attempts to do any feats either of strength or endurance which are too much for his heart, instead of strengthening it, he will strain

and weaken it. Even a short but severe exertion will cause the heart to dilate. In the young and healthy this dilatation soon passes off, but if the exercises be frequently repeated, or if it be so severe as to pass the bounds of recovery, the heart becomes permanently dilated and the person's power of work and strength is permanently diminished. But the amount of exertion which in one person would only cause pleasurable excitement is enough in another to produce cardiac strain and dilatation, and therefore medical inspection is absolutely necessary before the kind and amount of physical exercise for any child or youth is decided upon. In the University of Pennsylvania all students are obliged to take physical exercise as part of their course, but before they take it they are inspected medically. Any deficiencies they may have are ascertained, and the exercises they are required to take are of such a nature as to remedy their deficiencies and develop them symmetrically. Medical inspection may be looked upon as the foundation stone of physical exercise and we have all reason to be thankful that the present Government has rendered medical inspection in schools compulsory.

But physical education begins a long time before school life. It begins with babyhood, and the proper way to care for babies should be taught in all schools. I should not propose to establish dry classes upon hygiene which children would probably not comprehend, but I should like to see established in every school a class for the care of dolls. Every girl should have a washable, unbreakable doll which should be, for the time being, her baby. She should be taught how to wash dolly, how to feed dolly, how to treat dolly's sore throat or stomach ache, how to make clothes for dolly, how to take dolly out for exercise, how to hush dolly to sleep, how to provide dolly with fresh air and how to protect dolly from chills. In fact all the information that the girl will afterwards need for bringing up her own babies might be imparted in a concrete form in a way that they would enjoy and in a way that could be remembered in dolly's class. But what are the boys to be doing while the girls are learning how to tend dolly? Some of them may be learning gymnastics

with apparatus on the parallel bars, on the horizontal bars and on the horse, others again may play games of ball or others again may try their strength, in jumping, in obstacle races and in various games. Perhaps there is no drill which is more perfect than that which is insisted upon in cricket and boating and football, but only those who form the team enjoy the privilege of having this training. What we want is that every boy should have it, and this can hardly be done in any other way than by various forms of drill. Drill is very monotonous and may be greatly relieved by allowing the boys to learn to shoot, just as the girl's interest would be awakened by dolly. The objections to boys learning to shoot are the risk and the expense. Both of those may be reduced to a minimum by making the boys shoot with percussion caps at candles. At four or five yards the candle can be extinguished by the air issuing from a musket when the percussion cap is exploded, but the aim at the bottom of the wick must be nearly as accurate as to make a centre at a hundred yards. It might be held out as an inducement to them that the best shots would be allowed to practise with a Morris tube, and later on they might even learn the use of service rifles. The old war games such as "I spy" and "Prisoner's Base" might be adapted to modern warfare, and J. Fennimore Cooper's novels might be used to teach scouting to the bands of white men or Indians into which the boys might divide themselves. Some people might argue that such a course would tend to foster a spirit of militarism in this country. For my own part I believe that it would just be the reverse; that such training would greatly help boys to become volunteers, and that with an almost universal system of volunteering we might lessen our Army without risk, keeping a corresponding amount of tax money in our pockets, and live free from the dread of foreign invasion on the one hand, or from universal conscription on the other.

In order to ensure such a desirable end we require the co-operation of every man, woman, and child in the country, and for the purpose of obtaining this the National League of Physical Education and Improvement has been established.

The object of the League is not to displace any of the agencies at present working for the health and welfare of the people, but to make them known to one another, to ascertain how their work can best be supplemented when it is deficient, and to extend the benefits of physical training throughout the whole country. It thus hopes—

1. To save the babies.
2. To help the children.
3. To train the youths.
4. To instruct the parents.
5. To lessen the drink.

It is not a year since it was incorporated, but the good results of its action are already manifest, for it decided that the first object it should try to secure was compulsory medical inspection of schools, which it felt to be the foundation stone of physical education. It sent a deputation, on February 27 of this year, to wait on the Minister of Education. He expressed his sympathy with their requests, and now I think we may look upon medical inspection of schools as an accomplished fact.

Next we want the systematic teaching of hygiene by classes for "Dolly," then a pure milk supply, visitation of mothers, feeding of children, and in turn everything required to make us a free, healthy, strong, wise, and moral people.

HARRISON AND SONS, Printers in Ordinary to His Majesty, St. Martin's Lane.